HRI COMMENTS: ATSDR PUBLIC HEALTH ASSESSMENTS
EPA FACILITY ID: MAD002084093

The Housatonic River Initiative, (HRI), a 501(c)(3) non-profit organization, was formed in 1992 to advocate for the cleanup of the Housatonic River and Silver Lake.

HRI is a broad-based organization that has managed to bring together an unusually unlikely alliance of duck-hunters, former GE workers, river advocates, residents of Pittsfield's urban neighborhoods, and rural residents of Sheffield all united to clean and restore PCB-contaminated land and our common river. HRI's Board of Directors includes Massachusetts State Representative Christopher Hodgkins, George Darey, the Chairman of the Massachusetts Department of Fisheries and Wildlife, educators, sportsmen and women, and environmentalists. HRI's current President and Vice-President are former GE workers David Gibbs and Al Bertelli, who live in the Lakewood/Newell Street area, the most affected neighborhood of Pittsfield. HRI has many hundreds of dues-paying members in every town and city in Berkshire County. These members include Housatonic River property owners and contaminated commercial property owners. HRI's newsletter is sent to more than 2,000 residents..

HRI has been very successful in its efforts to galvanize public support and many local Boards of Selectmen have relied on HRI to represent their interests before the Massachusetts Department of Environmental Protection (MADEP) and the United States Environmental Protection Agency (EPA), and to keep them informed of Agency activities.

Based on HRI's decade-long advocacy and its ability to represent a wide variety of stakeholders, MADEP has recognized HRI "as a primary citizens advisory group for these sites" suggesting that "interested citizens and other parties are encouraged to join forces under the HRI umbrella.." HRI has also received several grants from the EPA to provide technical assistance to the Berkshire community.

We begin our comments on the Public Health Assessments for this site with several comments about the Massachusetts Department of Public Health's (MDPH) preface. (Page quotation references refer to the Public Health Assessment for **Newell Street Area 1**). We begin with a short history of public involvement in these issues because there has been a long-standing concern with the quality of work produced by MDPH, the state agency ATSDR has contracted with to perform these Assessments.

Some community members have been actively concerned about the possible health effects of the toxic chemicals being used at the GE Pittsfield facility since the late 1970s and early 1980's. This effort was prompted by EPA's ban of PCBs in 1977 and the realization that not only had local GE workers been occupationally exposed to PCBs but there was mounting evidence that PCB-contaminated oil had migrated from the industrial plant in underground plumes and were invading the adjacent residential and commercial areas. Despite assurances from GE and MADEP that the oil had not migrated across East Street onto the Newell Street Area of Lakewood, (ironically the community where many GE workers and their families lived) former Pittsfield Mayor Remo DelGallo and others were discovering PCB-oil in neighborhood basements.

One of the first organized responses to this concern for public health was spearheaded by Remo DelGallo and the late Bernie Kleban of Monterey, MA and the Massachusetts Coalition of Occupational Safety and Health. With the help of local nurses and Dr. K. D. Rosenman of New York, they organized a program of serum PCB testing.

They divided participants into three groups who had blood samples taken: 25 members of a retired GE workers council with a history of occupational exposure; 30 residents of the Lakewood neighborhood who might have been exposed to underground oil plumes and whose basements might have been contaminated; and 14 residents from the other side of Pittsfield with a similar socioeconomic and ethnic background. All participants were interviewed to determine their residency history, occupational history, and diet history with special concern for fish intake.

Here are some of the results:

Table II

Serum PCB Level of Participants by Group of Invitation

	n	Median PCB (ppb)	Range (ppb)	> 20 ppb n
Group I (retirees)	25	37.9	4.8-35.8	19
Group II (residents contaminated neighborhood)	30	12.8	1.7-378	6
Group III (residents non-contaminated neighborhoods)	16	9.8	3.2-47.4	3

(Median test: Group I vs. Group II, x^2=18.35, p<.0005; Group I vs. Group III, x^2 = 13.8, p<.0005; Group II vs. Group III, x^2 = 1.53, p<.7).

Table III

Serum PCB Level of Participants Divided into Four Groups on the Basis of Information Obtained on the Occupational and Residency History Questionnaires

		n	Median PCB (ppb)	Range (ppb)	> 20 ppb n	> 20 ppb %
A.	History of having worked at General Electric	43	21.7	4.8-378	23	53.5
B.	History of having lived with someone who worked at General Electric but no history of the individual ever working there	12	15.6	1.7-31.8	5	41.7
C.	Residents of the contaminated neighborhood and no association with General Electric	7	8.3	5.9-14.1	0	0
D.	Residents of non-contaminated neighborhood and no association with General Electric	9	6.9	3.2-17.1	0	0

It is important to note that this volunteer study was undertaken by community members who received absolutely no help from state or federal agencies.

While the MDPH notes on Page 3 “the public health assessments … do not consider opportunities for past worker exposures within the GE facilities themselves” the Rosenman study points not only to clearly elevated serum levels as a result of occupational exposure but to likely environmental exposure. Groups B (those with a history of having lived with a GE employee) and C (those who lived in the contaminated neighborhood with no history of GE employment) show serum levels significantly higher than residents of neighborhoods with no known contamination.

More than 20 years later, the residents of the Lakewood (and Newell Street Area 1) community wait for a well-crafted PCB serum study to determine whether or not their serum levels exceed current background levels.

he Quality Printing and Italian-American Club properties." (Page 7)

The statement reveals the limitations of a public health assessment that relies almost exclusively on a review of existing agency data. On-site visits coupled with comprehensive interviews with commercial and residential property owners in Newell Street Area 1 would have revealed that property owners have long disputed the integrity of the existing sampling regime, and its results, undertaken by GE contractors during the late 1980s and 1990s.

Moldmaster Engineering, Ravin Auto Body, and Vincent J. Stracuzzi have all made claims that the sampling locations were selective and arbitrary, and that those studies underestimated levels and amounts of PCB-contaminated material.

The Italian-American Club required three different short-term remediations as more and more PCB-contaminated soil was discovered, contradicting previous testing regimes and demonstrating the lack of reliable soil data.

HRI has been a vociferous critic of the GE sampling program. For more than a decade and a half, GE′s 1982 Stewart Report estimate of a total of 39,000 pounds of contaminated sediments and soils in the entire river system prevailed in the eyes of the environmental agencies. It took years and years of advocacy – including presenting testimony of Ed Bates, the former GE Manager of Tests at Power Transformer, and Charles Fessenden, Supervisor of Calculations at Tests, that a million and a half pounds of PCBs due to daily spillage and loss at Power Transformer went down the drain and into the river – to ensure that the Agencies reviewed GE′s sampling protocol and revised their estimates of the contamination. Indeed, during the Building 68 Removal of a 550-foot section of bank soil and river sediment, the December 2, 1997 issue of The Berkshire Eagle noted how valid our concerns about Housatonic River sample data had been:

"If GE's estimated average concentration of 1,550 parts per million for the sediments in the hot spot is even close, then at least 10 tons of pure PCBs were removed from the river bed off Building 68. That would represent more than half of the 39,000 pounds a GE consultant estimated was in the Housatonic River sediments above the Connecticut border in 1983." This is but one example of a massive failure to adequately represent the scope and amount of contamination. And it is important to note that Ed Bates' figures included only the daily loss rate at Power Transformer. We have learned over the years that there were continuing additional sources of PCB oil, including at the GE Axe Yard on the plant and leakage of the extraordinary numbers of barrels GE stored its waste oils.

We offer two more stark examples in the Newell Street Area I to demonstrate the limitations of relying on existing agency data. The first is the issue of homes and businesses that used the tongue and groove oak that lined GE's transformers in construction projects. Ironically, the PCB oil helped to preserve this wood, and it was often taken or trucked from the GE scrap yard. HRI, based on conversations with former GE workers, raised this issue with the DEP and EPA several years ago. We have been told that many people used this wood to create porches, etc.

Part of one of Vincent Stracuzzi's building in the Newell Street Area I contains this wood. To our knowledge, nowhere in the records is there evidence that GE reported that this wood was being used; nor do we know whether reliable records exist that might help identify where this material might have gone. There has not been, to our knowledge, any publicity campaign by the regulatory agencies to alert the public that those who might have obtained this wood might be adversely affected.

The second example is the dirt floor of Vincent Stracuzzi's Newell Street warehouse. This land was filled-in with GE material prior to its construction. While GE contractors did some testing of soil on the Stracuzzi property, there was no testing of the indoor soil. And with all the GE testing in Newell Street Area I, the dirt floor was never brought to the attention of the regulatory agencies. Just recently while doing some excavation to reinforce his building, Vincent Stracuzzi unearthed GE parts and wooden blocks at a depth of six feet.

To give you an idea about the pervasive nature of GE fill, here is a picture of what Mr. Stracuzzi discovered on his land:

GE BUSHING BURIED IN V. STRACUZZI BACKYARD

When the EPA finally remedied this lapse in testing by GE and its contractors, sampling revealed that PCB levels in the first foot reached 4.7 ppm, and as high 1,000 ppm at a depth of 3-6 feet, and 4,700 ppm at 10-15 feet. (The Predesign Investigation Report for Newell Street Area I Removal Action)

Another example of how easily the public can be exposed to GE contaminated fill comes from 501 Dalton Avenue in a commercial area of the city.

GE ELECTRICAL PARTS FROM RECENTLY EXPOSED FILL

For many years, both as a participant in the MDPH's Housatonic River Area Advisory Committee on Health Studies and at several public meetings, HRI has urged the MDPH to interview local residents and local commercial property owners to gain a first-hand report of local conditions and possible and potential exposure routes.

Had the five site visits conducted by MDPH personnel included taking testimony from affected commercial and residential property owners, the report might have suggested some reasonable skepticism about the validity of data, and might have required some revision of historic, present and potential exposure scenarios.

On Page 13, the report states: "In evaluating the public health implications of opportunities for exposure to PCBs, MDPH has been conducting a variety of activities in the Housatonic River area. MDPH previously completed an exposure assessment study of the Housatonic River area (MDPH 1977). Residents of eight communities that live within one-half mile of the Housatonic River were randomly chosen to participate in the exposure assessment study.

The MDPH Housatonic River Area PCB Exposure Assessment Study states: "Of the total 1529 participants enrolled in the household screening survey, 120 were selected and invited to participate in blood testing for PCBs. Children less than 18 years of age were not selected to participate because the three main predictors of serum PCB levels are age, occupational exposure, and consumption of contaminated fish and seafood. Moreover, children were not likely to have significantly higher exposure than adults, hence not likely to have higher blood PCB levels. Therefore, MDPH did not believe that the risk of drawing blood from minors was justified." (Pp. 19-20)

Finally, 69 individuals of the 1529 participated in blood testing. "Total serum PCBs, which were classified as Aroclor 1260, ranged from non-detectable to 35.81 ppb, with a mean of 5.44 ppb and a median of 3.93 ppb." (Page 20)

The Public Health Assessment continues: "In addition, residents who were not chosen for the study but who were concerned about exposure to PCBs were offered the opportunity to volunteer to participate in a separate effort. **The exposure assessment study found that although the participants had serum PCB levels within the reported background range for nonoccupationally exposed individuals (ATSDR 2000), those who engaged in high-risk activities (e.g., high frequency and duration of consumption of contaminated fish) had higher serum PCB levels.**" (emphasis added)

In MDPH's Abstract for the study, they stated: **"The serum PCB levels found among participants of both studies were generally within typical background estimates for a non-occupationally exposed U.S. population. ATSDR reports that, for U.S. populations without occupational exposure, mean serum PCB levels were usually between 4 and 8 ppb, with 95% of the individuals having concentrations less than 20 ppb. Since the results of this study represented individuals with the highest risk of exposure, it is reasonable to assume that serum PCB levels of most non-occupationally exposed residents in the HRA communities are within the US background range, though individual differences may likely occur."** (Page 2, emphasis added.)

HRI argued during the planning stages that this study was poorly designed and would not attract those with the most likely history or opportunity for exposure to PCBs.

We argued as well that the study should include serum testing of individuals from neighboring hilltown communities in Berkshire County without opportunities for exposure to PCBs to establish a more local and more valid background level. Our suggestions were ignored.

Given the proximity to the Housatonic River, past exposure to emissions from the GE PCB-incinerator, the fact that there has been ongoing exposure to contaminated soil, and the acknowledgment on page 12 of the Assessment that "potentially affected populations include employees at the commercial businesses, customers of these businesses, and those who might have used the site recreationally (for example, members of the Italian-American Club who picnicked and played bocce games)", it is reasonable to suggest that the individuals that work and reside in this area should be the subjects of a PCB serum study.

Spurred by our concerns about the MDPH Housatonic River Area PCB Exposure Assessment Study and GE's interpretation of the study's results to claim that Pittsfiel residents had average PCB levels and there was therefore no cause for public concern, the Attorney-General of Massachusetts, Scott Harshbarger, convened a workshop on February 5, 1998 to discuss "Health Concerns Relating to PCB Contamination in Pittsfield and Southern Berkshire County." The group included representatives from HRI, the USEPA, the Massachusetts Department of Environmental Protection, MDPH, Drs. Richard Clapp and David Osonoff of Boston University and Dr, David Gute of Tufts University.

The report noted: "Attendees raised the following concerns regarding the study's primary conclusion:

- sample size: Some expressed concern about the sample size used. For example, in the selected target population, only 35 people from Pittsfield had their blood sampled. Although these people by definition lived within one-half mile of the Housatonic River, they otherwise were presumably distributed throughout Pittsfield. Therefore, it is likely that only a small number of them actually came from the Lakewood area where people have voiced the strongest health concerns. … When questioned about such issues, DPH personnel stated they did not have the resources available to produce the statistical "power" they would have liked.

• the limited nature of the study's aims: As the DPH representatives explained, the blood study had relatively modest goals: to take an initial look at various pathways of exposure of PCBs and to examine correlations between these pathways and actual blood levels. In other words, as the official title of the study makes clear, this was a study of "exposure" to PCBs. While the levels of PCBs in people's blood presumably correlates somehow with the degree of health risks presented, this relationship was not a subject of study here nor is it generally well understood. Strictly speaking, therefore, the blood study did not itself examine health risks at all …

• comparison to national background: … The ATSDR figure is based on data that is at least a decade old, and therefore it may no longer be accurate. In addition, neither the ATSDR figure, nor the DPH results, were "congener specific." Because the PCBs at issue in Pittsfield are of the relatively toxic variety, while the ATSDR figure is for all varieties (including the much more prevalent congeners of lesser toxicity), the comparison to the ATSDR figures may not be "apples to oranges," but it may be "apples to mixed fruit salad." … In light of such problems, many workshop attendees questioned why the blood study did not include for comparison purposes a "control group" of people in Berkshire County who had likely not been exposed to PCBs. The DPH response was again that the agency did not have the resources available to do what it would have liked." (Report Relative to the Workshop Regarding PCB Contamination, pp. 7-9)

Many participants at the Attorney-General's Workshop shared our concerns, and publicity about these criticisms prompted public debate. Pittsfield Mayor Doyle called on the MDPH to resolve some of these matters and State Commissioner William O'Leary convened an Expert Panel of nationally-recognized PCB researchers to reexamine some of these issues.

The Expert Panel included 11 nationally and internationally known experts on the health effects of PCBs. Unfortunately the MDPH charged the panel with a broad, general mission and, as a result, the panel failed to look specifically at our experience in Pittsfield and Berkshire County.

The panel agreed with us at HRI that the MDPH range of 4-8 ppb in blood for people not exposed to PCBs at the workplace is not current, and that the range is probably significantly lower.

On December 19,.2000 members of the Expert Panel met with the public. One of the most interesting aspects of the meeting was the interchange between residents and panel members. The more the panel members learned about the various ways people in our area have been exposed to PCBs – working at GE; exposure to PCB-contaminated fill at home, or at Allendale School; exposure in Lakewood to PCB-oil plumes; eating fish or ducks; or airborne exposure via the GE PCB-incinerator or volatilization – the more several panel members supported the idea that additional, better designed studies made sense. Two local doctors, Dr. Charles Wohl and Dr. Siobhan McNally, a pediatrician, emphasized the need for more information. Dr. McNally stressed the importance of gathering specific information about the risk to children. And several members of the Expert Panel agreed with her that because of the multiple pathways of exposure, and the high levels of PCB-contaminated soil in residential areas, they thought it appropriate to design a serum PCB study of children and young people in Pittsfield.

On Pages 4-5, the Assessment notes the results of five site visits, and states in regard to the fifth site visit on June 21, 2001 that: "On this visit, some picnic tables with benches at the back yard of the Italian-American Club and piles of discarded auto parts at the back of Ravin Auto Body were noted. Some areas of the club property were either bare dirt or had evidence of high use (e.g. low grass cover).

"**There is a fence, which is in good repair at the back of all the commercial buildings along the riverbank. The perimeter of the site facing Newell Street is either paved or covered with low grass."** (emphasis added.)

It is important to note that this is an ever-changing reality. While the fence may appear to be an effective barrier in the short-term, older children and teenagers have a history of finding ways around and over fencing.

THE PLAYGROUND ON NEWELL STREET – FENCE AT REAR

On October 14, 1997, HRI invited Massachusetts Attorney-General Scott Harshbarger to attend a community meeting at the Italian-American Club. One of the community members who spoke at that meeting is Mark DiPalazzo.

MARK DIPALAZZO

This is what he said:

"I just came through Newell Street here and there's a big opening in the fence up here and it's been there for 25 years I'm 30 years old I've lived in this neighborhood my whole life. We used to play down there all the time and the city and GE doesn't seem to care anything about this. The PCBs are all the way up Dorchester Avenue where I live. I was born right here on 222 Newell Street. What is the state going to do to protect us?

"Now I know I've got it in me and I see a lot of people in this room I grew up with – I grew up with their kids, and I know they got it in them. I've already got cancer cut out of me once in my left kidney … Are people going to die? 15 Longfellow Avenue [one of the core residential fill properties], those people were good friends of mine. Their kids I grew up with, they both died horrible deaths of cancer."

It is safe to assume that young people will regard fences as a challenge, and will often climb over fences just to get where they're not supposed to be, especially at night to gain access to the river.

Pages 8 –10 detail the results of air sampling efforts in Newell Street Area I, concluding with: "Thus, the background concentrations were about 10 times lower than those detected at the Newell Street Area I site." We have been concerned about ambient air exposure for many years and were often told that PCB ambient air levels were not high enough to be of concern. For many years GE operated its thermal oxidizer burning PCB-contaminated oil next to the residential neighborhood on Newell Street.

THERMAL OXIDIZER FROM VINCENT STRACUZZI'S PROPERTY

THERMAL OXIDIZER PLUME FROM NEWELL STREET

Ed Bates, the former Manager of Tests at Power Transformer and an engineer, told us in a 1990 interview: "They say that it's 99%, 99 and a half percent effective, which is just fine but we just got word – we got figures in there from the Advocate, the North Adams paper, where last year they burned a million and eight hundred thousand pounds of PCBs. Well that's good if you're losing two-tenths of one percent – it isn't much but it adds up to about 3,600 pounds – where's it going?"

Joe Carr of Fasce Place off of East Street in Lakewood and a former GE worker told us this information about the thermal oxidizer: "I don't know if you remember Puff. We used to call it Puff. We burned a lot of materials that were hazardous and it was supposed to be regulated by the Environmental Protection Agency and several other agencies … with GE. And there were rods in there that were called sensors.

"That thing was a hundred and some odd feet tall and there must have been two or three hundred rods in there that would measure what was coming out for smoke and so that they would either burn easier – it would tell them how fast they could burn stuff … and then I had a person I know from a government agency go up there and there were no rods in there.

"They were all burned out – they used to burn it so hot and there were no rods to determine what the hell is all over Lakewood – all the smoke, all that stuff. We're right here. And he finally … followed up through his agency and his agency finally came in and told them, that's it, shut it down."

The report concludes that PCBs in the soil are the primary environmental media of concern in the Newell Street Area I site and states that the MDPH "is currently conducting several public health activities (e.g., descriptive analysis of cancer incidence data, serum PCB testing). Information gathered from these additional activities will improve MDPH's abilities to assess the public health implications of PCB contamination at all sites being evaluated in public health assessments for the GE site."

"**Thus, MDPH evaluation of potential public health implications related to the Newell Street Area I site should be considered preliminary and based on currently available information.**

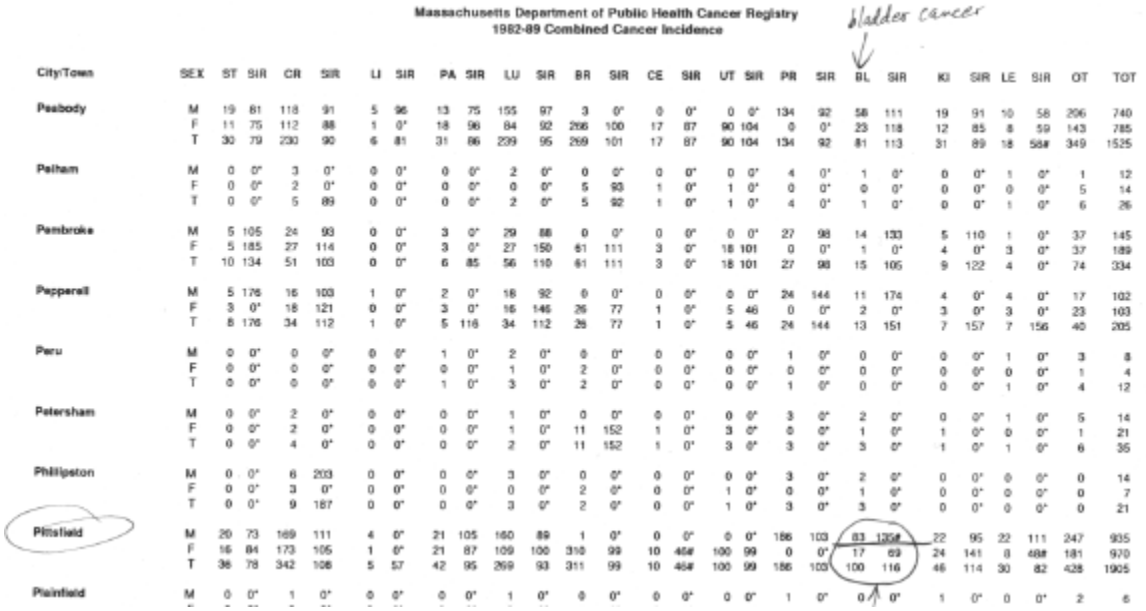
"ATSDR requires that one of five conclusion categories be used to summarize findings of health consultations and health assessments. These categories are: 1) Urgent Public Health Hazard, 2) Public Health Hazard, 3) Indeterminate Public Health Hazard, 4) No Apparent Public Health Hazard, 5) No Public Health Hazard. A category is selected from site-specific conditions such as the degree of public health hazard based on the presence and duration of human exposure, contaminant concentration, the nature of toxic effects associated with site-related contaminants, presence of physical hazards, and community health concerns.

"Preliminary conclusions from evaluating the Newell Street Area I site include the following: Based on past opportunities for exposure, the site represented a public health hazard, particularly to those who used the grounds of the Italian-American Club for frequent recreational purposes, and possibly the Quality Printing property, particularly below the building and the River where dioxin concentrations are elevated. MDPH continues to offer residents concerned about past opportunities for exposure the service of completing exposure questionnaires and having serum PCB testing and analysis.

"Remediation and institutional controls implemented in the late 1980s through the mid-1990s have resulted in considerably lower PCB concentrations in surface soil or reduced access to soils containing PCBs at the Newell Street Area I site. **Thus, under current use conditions and with institutional controls in place, ATSDR would class the site overall as an 'Indeterminate Public Health Hazard'.** Opportunities for exposure to soils in one part of the Italian-American Club should be minimized, particularly for young children. Also should institutional controls currently in place be removed or not be maintained, should construction activities be undertaken, or should the use of the site change (e.g., new residences, greater recreational use), the site could be a

potential health hazard in the future, depending on the extent to which opportunities for exposure exist." (Pages 21-22, emphasis added)

While the report concludes that "based on past opportunities for exposure, the site represented a public health hazard," there is no mention of the more than decade-long exposure to ambient air concentrations of PCBs and dioxins from the continual operation of GE's Thermal Oxidizer, the PCB incinerator called Puff by the residents of Lakewood. This facility was operating across the river from Vincent Stracuzzi's property in the Newell Street Area I site. As the testimony of both Ed Bates and Joe Carr indicates there is reason to believe that this exposure was substantial.



Massachusetts Department of Public Health Cancer Registry
1982-89 Combined Cancer Incidence

bladder cancer

City/Town	SEX	ST	SIR	CR	SIR	LI	SIR	PA	SIR	LU	SIR	BR	SIR	CE	SIR	UT	SIR	PR	SIR	BL	SIR	KI	SIR	LE	SIR	OT	TOT
Peabody	M	19	81	118	91	5	96	13	75	155	97	3	0*	0	0*	0	0*	134	92	58	111	19	91	10	58	206	740
	F	11	75	112	88	1	0*	18	98	84	92	266	100	17	87	90	104	0	0*	23	118	12	85	8	59	143	785
	T	30	79	230	90	6	81	31	86	239	95	269	101	17	87	90	104	134	92	81	113	31	89	18	58#	349	1525
Pelham	M	0	0*	3	0*	0	0*	0	0*	2	0*	0	0*	0	0*	0	0*	4	0*	1	0*	0	0*	1	0*	1	12
	F	0	0*	2	0*	0	0*	0	0*	0	0*	5	93	1	0*	1	0*	0	0*	0	0*	0	0*	0	0*	5	14
	T	0	0*	5	89	0	0*	0	0*	2	0*	5	92	1	0*	1	0*	4	0*	1	0*	0	0*	1	0*	6	26
Pembroke	M	5	105	24	93	0	0*	3	0*	29	88	0	0*	0	0*	0	0*	27	98	14	133	5	110	1	0*	37	145
	F	5	185	27	114	0	0*	3	0*	27	150	61	111	3	0*	18	101	0	0*	1	0*	4	0*	3	0*	37	189
	T	10	134	51	103	0	0*	6	85	56	110	61	111	3	0*	18	101	27	98	15	105	9	122	4	0*	74	334
Pepperell	M	5	176	16	103	1	0*	2	0*	18	92	0	0*	0	0*	0	0*	24	144	11	174	4	0*	4	0*	17	102
	F	3	0*	18	121	0	0*	3	0*	16	146	26	77	1	0*	5	46	0	0*	2	0*	3	0*	3	0*	23	103
	T	8	176	34	112	1	0*	5	116	34	112	26	77	1	0*	5	46	24	144	13	151	7	157	7	156	40	205
Peru	M	0	0*	0	0*	0	0*	1	0*	2	0*	0	0*	0	0*	0	0*	1	0*	0	0*	0	0*	1	0*	3	8
	F	0	0*	0	0*	0	0*	0	0*	1	0*	2	0*	0	0*	0	0*	0	0*	0	0*	0	0*	0	0*	1	4
	T	0	0*	0	0*	0	0*	1	0*	3	0*	2	0*	0	0*	0	0*	1	0*	0	0*	0	0*	1	0*	4	12
Petersham	M	0	0*	2	0*	0	0*	0	0*	1	0*	0	0*	0	0*	0	0*	3	0*	2	0*	0	0*	1	0*	5	14
	F	0	0*	2	0*	0	0*	0	0*	1	0*	11	152	1	0*	3	0*	0	0*	1	0*	1	0*	0	0*	1	21
	T	0	0*	4	0*	0	0*	0	0*	2	0*	11	152	1	0*	3	0*	3	0*	3	0*	1	0*	1	0*	6	35
Phillipston	M	0	0*	6	203	0	0*	0	0*	3	0*	0	0*	0	0*	0	0*	3	0*	2	0*	0	0*	0	0*	0	14
	F	0	0*	3	0*	0	0*	0	0*	0	0*	2	0*	0	0*	1	0*	0	0*	1	0*	0	0*	0	0*	0	7
	T	0	0*	9	187	0	0*	0	0*	3	0*	2	0*	0	0*	1	0*	3	0*	3	0*	0	0*	0	0*	0	21
Pittsfield	M	20	73	169	111	4	0*	21	105	160	89	1	0*	0	0*	0	0*	186	103	83	135#	22	95	22	111	247	935
	F	16	84	173	105	1	6*	21	87	109	100	310	99	10	46#	100	99	0	0*	17	69	24	141	8	48#	181	970
	T	36	78	342	108	5	57	42	95	269	93	311	99	10	46#	100	99	186	103	100	116	46	114	30	82	428	1905
Plainfield	M	0	0*	1	0*	0	0*	0	0*	1	0*	0	0*	0	0*	0	0*	1	0*	0	0*	1	0*	0	0*	2	6

MDPH Cancer Registry 1982-1989 Combined Cancer Incidence

While MDPH issued a fish advisory in the early 1980s because of high levels of PCBs in Housatonic River fish it missed a multiple of opportunities to design and perform critical public health assessments at one of America's most significant PCB sites.

Indeed even MDPH's first cancer registry statistics for 1982 1989 revealed that male bladder rates for Pittsfield was up by 35%. As we've shown with the Rosenman study, GE workers, their families, and those who lived in the Lakewood section, including Newell Street Area I, had significantly higher PCB serum levels than other Pittsfield residents.

The MDPH should have conducted several PCB serum studies in the 1980s to discover more about both occupational and non-occupational exposure.

The PUBLIC HEALTH ACTION PLAN on page 23 details the additional action MDPH is taking and will be taking to update current data: "1. Due to the discovery during summer 1997 of widespread residential PCB soil contamination, MDPH is conducting a separate study of residents who were concerned about this exposure. MDPH set up a hotline number for individuals to call in with health-related concerns, complete exposure questionnaires, and request serum PCB testing. Results of these more recent analyses of serum PCB levels and evaluation of the community health concerns expressed on the hotline calls are being developed as a separate public health assessment.

"2. MDPH is conducting a descriptive analysis of selected types of cancer (i.e., bladder cancer, liver cancer, non-Hodgkin's lymphoma, breast cancer, thyroid cancer and Hodgkin's disease) in Pittsfield, Lenox, Lee, Stockbridge, and Great Barrington that occurred from 1982 through 1994, utilizing data from the Massachusetts Cancer Registry. This analysis will include evaluations of temporal and geographic trends (e.g. analysis of smaller geographic areas, or census tracts).

"3. MDPH established its Housatonic River Area Advisory Committee on Health Studies in 1995. This committee is comprised of local residents, representatives from the local medical community, environmental and health professionals, representatives from the offices of local elected officials and local health departments, MDPH staff will continue to hold meetings with committee members to report on the status of various activities and to discuss and get feedback on the conduct of MDPH health activities and

investigations (e.g., development of study protocols, public health assessments in the area.

"Information gathered from these additional activities will improve MDPH's ability to assess the public health implications of PCB contamination in the Pittsfield area. The final public health action plan will be developed after information from these activities is considered in the final public health assessments."

We have made clear our feelings about how this report can be strengthened. We would like now to suggest several studies that could possibly expand the critical data base for our community, and in the process better fulfill the mission of creating an adequate public health assessment for this site.

Let's start with the difficult and complicated issue of the inhalation route of exposure. Our growing frustration with a lack of investigation by our regulatory agencies into the problem of PCBs in ambient air led us to enlist the aid of experts like Dr. Brian Bush, Dr. David Carpenter and Ann Casey at the School for Public Health at the State University of New York in Albany (SUNY). They suggested designing a study that would more closely examine inhalation of PCBs as a possible human health hazard. In support of a grant application they conducted some preliminary investigations that would generate date for both serum PCB levels in participants and indoor PCB air levels.

One of the homes used for preliminary tests was that of David Gibbs of Newell Street. (Mr. Gibbs' home is located in the Newell Street Area II site). According to David Gibbs, the highest reading posted was 103 nanograms per cubic meter. The SUNY at Albany team took readings in other locations as well: 10 samples of indoor air in basements with a range of total PCBs from 12.5 – 33.7 ng/m3 with a median of 20.3 ng/m3; and 12 samples of indoor air in living/work areas with a range of total PCBs at 5.0 – 40.6 ng/m3 with a median of 11.4 ng/m3.

On Page 5, Weston notes: "The lowest standard used by the laboratory to calibrate their instrument was a CSI standard at a concentration of 1.0 pg/ul. Given the final extract volume of 500 ul and the archiving of half of the extract volume, the 1.0 pg/ul concentration of the lowest standard corresponds to 1.0 ng of target PCBs on the PUF tubes. Approximately, three cubic meters of air were sampled through each tube. This then corresponds to the approximately 0.3 ng/m3 reporting limit determined by the laboratory. This is well below the 1.0 ng/m3 limit required by the DQO."

On Page 3, Weston states: "All the samples were extracted 13 days after collection. This was within the 14-day technical holding times as required by the technical specification. The samples were properly preserved at 0 degrees Centigrade and were kept in the dark."

Both SUNY Albany and Weston tested in the Gibbs' second floor living room. Weston found levels of 0.307 ng/m^3 for its Total Trichlorobiphenyl and 0.376 ng/m^3 for Total Tetrachlorobiphenyls. Dr. Brian Bush, Associate Professor, and Ann Casey, Research Support Specialist of the School of Public Health at SUNY Albany submitted

"Comments on Air Sampling Report on Parcel number J9-23-7 by Roy F. Weston, Inc." citing what they believe to be inadequacies in the Weston report.

Regarding methodology, they stated: "The high resolution mass spectrometry employed in this study is the best available mass spectrometry at the present time. Unfortunately, the quantitation limit of 1 ng/cubic meter under the volumes collected (3 cu meters) is inadequate for the problem under investigation. Also, congener specific methodology is not employed, except for a selected series of PCB congeners recommended by WHO. This is inadequate because of the unique nature of the pollution at Pittsfield calls for the determination of the full range of possible PCB congeners. Tons of fullers earth contaminated with percentage quantities of PCBs Aroclor 1254 and 1260, was dumped near peoples homes businesses and schools (sic). The School of Public Health laboratory of the University at Albany carried out two brief surveys of the property using dual-column congener-specific methodology with an electron capture g c detector which is one or two orders of magnitude more sensitivity (sic) than any mass form of spectrometry."

Bush and Casey continue: "Individual congeners: the selected "target" PCB congeners which were measured were recommended by WHO for studies of food and human tissue contamination. These are unsuitable for a novel situation such as this. When the reporting limits (RL in report = 0.3ng/cu meter (rounded)) for each congener are compared with the quantity our laboratory determined in the basement and living room air. Four of the target congeners in the basement air should have been reportable based on our data, but were in fact assigned a "U". We cannot find a definition for "U" in the report. The recovery of one internal standard was only 23% and moreover the samples were allowed to wait for up to 2 weeks after extraction before analysis, which may account to the lack of a reported value."

Bush and Casey comment about the significance of the report: **"The two congeners analyzed for by Roy Weston, were detected by the School of Public Health Laboratory in the living room (IUPAC numbers 105 and 118). Work carried in our laboratory shows that these two congeners are major compone nts of Aroclor 1254 vapor, but not Aroclor 1260 vapor. Congener 118 had a high bioaccumulation factor (>10^7) when rats breathed vaporized Aroclor 1242 for 30 days (Casey et al. Aroclor 1242 inhalation and ingestion by Sprague-Dawley rats. 1999 J. Tox and Env Health Part A 56:311-342). The concentration of congener 118 in the experiment with rats was 0.1 ng/cu meter (below the 'reporting limit' of the Roy Weston report) which gave rise to a concentration of 14 ng/g in the rats' fat after 30 days exposure. This finding illustrates the importance of the level of contamination found in the living space to anyone occupying the residence. Moreover, this PCB congener is classed as 'semicoplanar' and is known to have serious 'dioxin-like' effects on mammals, hence the analytical sensitivity achieved in the Roy Weston study was inadequate."** (emphasis added.)

The Massachusetts DEP prepared "A Comparison of PCB Indoor Air Levels at 145 Newell Street with Several Sources of Background Data for PCBs in Air" dated 11/19/98. The chart listed the following:

"0.102 ug/m^3 - Indoor air: highest indoor air measurement at 145 Newell Street (Univ. of Albany School of Public Health, **draft data,** 4/27/98).

0.457 ug/m^3 - Indoor air: average level in schools and offices with PCB transformers, Minnesota 1984 (ATSDR 1997).

0.229 ug/m^3 - Indoor air: average level in schools and offices without PCB transformers, Minnesota 1984 (ATSDR 1997)

0.1 – 7.5 ug/m^3 - Indoor air: range in buildings with PCB-containing sealants and coated particle board (Balfanz *et al*., Proceedings of Dioxin 1993 Conference)

0.0005 – 0.003 ug/m^3 – Outdoor air: range of 24-hour average concentrations at Berkshire Community College, 1993 – 1995 (Supplemental Phase II/RFI, January 1996)"

We have several points to make about this comparison. The first point speaks to recent research in both the U.S. and Europe that is sparking concern about developmental effects due to PCBs at relatively low background levels. The second point is that when the data for the Minnesota studies were gathered in 1984, the ban on the manufacture of PCBs had been in effect for only seven years and serum background levels were in the 4 to 8 ppb range, four to eight times higher than present levels.

EPA IRIS for Polychlorinated biphenyls (PCBs); CASRN 1336-36-3; (06/01/1997) states:

"For inhalation of evaporated congeners, the middle-tier slope factor can be converted to a unit risk estimate and ambient air concentrations associated with specified risk levels.

Upper-bound slope factor: 0.4 per (mg/kg)/day

Upper-bound unit risk: 1 x 10-4 per ug/cu.m

Ambient air concentration associated with a risk of:

1 in 10,000 1 ug/cu.m

1 in 100,000 0.1ug/cu.m

1 in 1,000,000 0.01 ug/cu.m

These estimates should not be used if ambient air concentrations exceed 100 ug/cu.m, since above this concentration the dose-response curve in the experimental range may provide better estimates.

For inhalation of an aerosol or dust contaminated with PCBs, the slope factor for "high risk and persistence" should be used instead."

Given EPA IRIS figures, the indoor air levels of 0.103 ug/m^3 at David Gibbs' house present only a risk of 1 in 100,000. Yet questions remain. Are EPA IRIS figures

generated using congener-specific analysis? Additionally, the Gibbs family face several probable PCB exposure pathways. Their home had actionable levels of PCB-contaminated soil; the children could have been exposed via the following pathways: - food chain exposure, sediment or soil ingestion, dust or aerosol inhalation, and dermal exposure. Not only has the Gibbs family been exposed to the PCBs in their indoor air but they lived a few blocks from the GE PCB Thermal Oxidizer and the PCBs in the outdoor air. David Gibbs also worked for many years at GE, and as many workers have told us, they brought their clothes which were often saturated with PCB-oil back home with home. No one has adequately calculated this cumulative risk factor.

Given the issues raised by the SUNY Albany response to the Weston report, HRI believes there is reason to believe that further indoor PCB air tests are warranted, as well as analysis of a cumulative risk assessment that adds up multiple pathways and exposure scenarios.

On February 22, 2002, HRI and Tufts University sponsored a forum on PCBs and Health Effects. Dr. David Carpenter made a report about some of the preliminary data his team collected in Pittsfield. He stated:

"What I'm going to present to you today is a very preliminary study been published. It won't be published unless we are able to get more data. It was preliminary data that we collected here in Pittsfield for a grant. … Unfortunately the study section did not agree with us and so we really have not been able to complete this study.

"But let me say a little bit about the hypothesis behind this grant which I think still must be accepted as a hypothesis. That hypothesis is that inhalation of PCBs is a major route of exposure. … Now most people would tell you consumption of contaminated fish is the major route of exposure to PCBs. … I wouldn't deny that at all. For those people that eat contaminated fish, you can get a body burden with just a few

meals that certainly exceeds that that one's going to get by living near contaminated sites, dermal absorption, breathing in, that sort of thing.

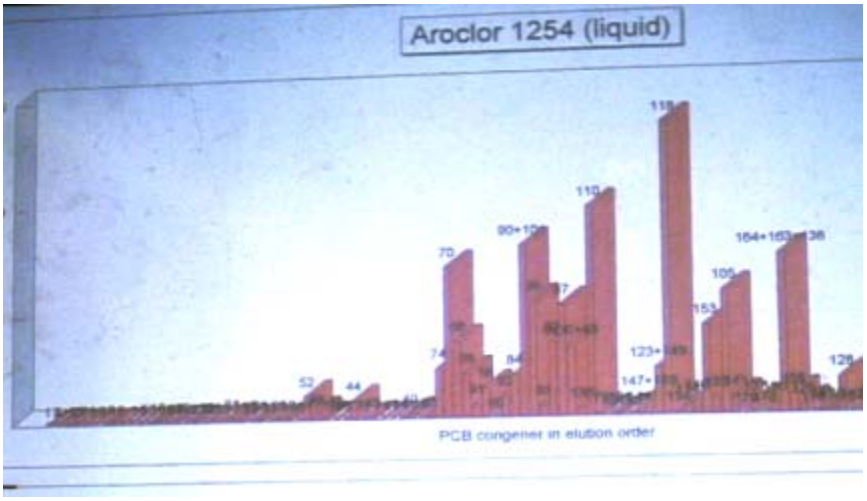
"That's not really the question though because most people, as was seen on this slide, never ate the fish. This is true around the Hudson as well. The real question is what are the levels in those people and are the levels of PCBs in those people sufficiently high to cause disease. Now I can't answer all those questions. What we've done is a few preliminary studies on a relatively few people in a relatively few houses that looked at the air levels in the basement and in the living room and outside the home and looked at the PCB levels in the people.

"Now our hypothesis was that we might be able to relate the congener profile in the people to the congener profile in the air. Let me say right up-front that we were not able to do that for the most part … But this is the summary of our date. We had blood from 21 people. The median total PCB concentration was 4.2 nanograms per gram, 4.2 ppb. … Now if you look at the 2000 Tox Profile, ATSDR says that unexposed populations will have PCB levels between 0.9 and 1.5 ppb. There really hasn't been a current study of truly unexposed people. … I see this as being elevated. It's not sky high. These are mean of 21 people between 1.4 and 11.2. For people that have no identifiable risk of exposure I see that as being elevated probably by a factor of somewhere between two and four-fold.

"The indoor air in the basement averaged 20.3 nanograms per cubic meter. Now ambient PCB levels anywhere in the world away from contaminated sites will be about 1 nanogram per cubic meter. So that's elevated. Now the living-room, the average was 11, and the outdoor air was 3. So the outdoor air was slightly higher than you would have in a totally pristine area, but you go in the middle of almost any major city and you're going to get levels that are of this kind of value. Now these values again, I see as being somewhat elevated but I think there are a lot of people who will argue with me about that.

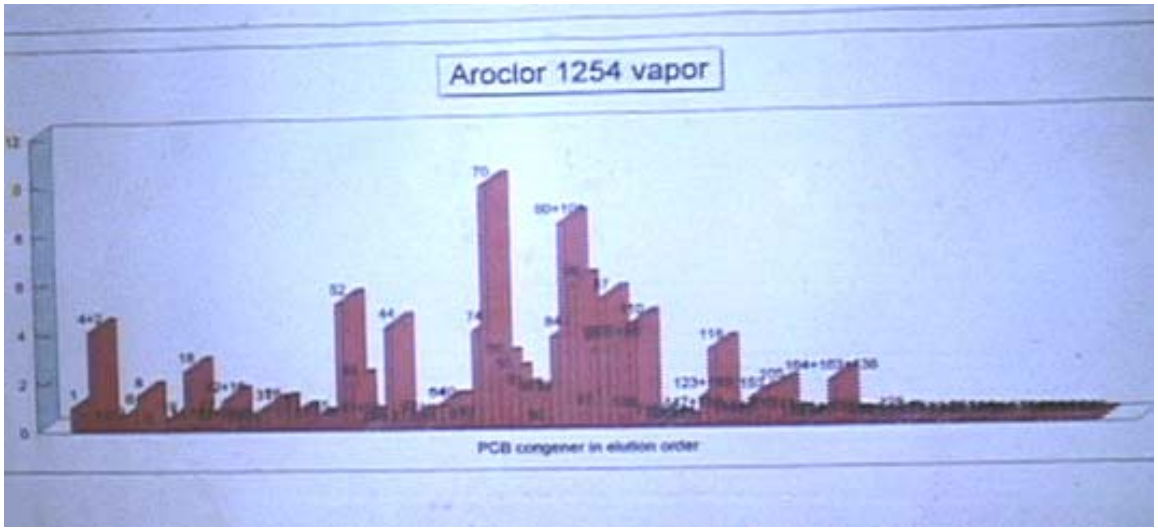
"There is an OSHA standard for indoor PCBs in air for 8-hour working days of 1,000 nanograms per cubic meter. Actually the paper that I mentioned earlier … was a study of rats exposed to volatile PCBs at a concentration of 700 nanograms per cubic meter and in that publication there was significant accumulation in the animals. There was thyroid pathology. There was bladder pathology, and clearly there was a demonstration that volatile PCBs could be breathed in by an animal to a degree that could cause pathologic changes, and that this was at a level lower than the OSHA standard.

"Most people think of PCBs as not being very volatile, and that's true, they're not very volatile. But they do volatilize, and further more, they volatilize in a fashion where not every PCB congener has the same properties. For quick review, there are 209 PCBs depending upon how many chlorines are on the molecule. The mixtures that were used primarily here in Pittsfield were Aroclors 1254 and 1260. These are relatively highly chlorinated Aroclors and again most people know that if you have a few chlorines you're more volatile than if you have a lot of chlorines. And therefore volatization of PCBs are often considered to be more likely if you used one of the Aroclor mixtures that's less chlorinated. But here is pure liquid Aroclor 1254 and this is the pattern of congeners that comes up.



"Now what we're looking at here is the delay in which these congeners come off the columns of the GC Mass Spec. So in general these are lower chlorinated, these are higher chlorinated. Aroclor 1254 is 54% chlorine by weight, and this is sort of the distribution of these different peaks and the numbers here refer to, identify the individual PCB congeners.

" … Now this was done by taking liquid Aroclor, passing air over it. There was a filter to get any droplets, so this is true PCBs in air.



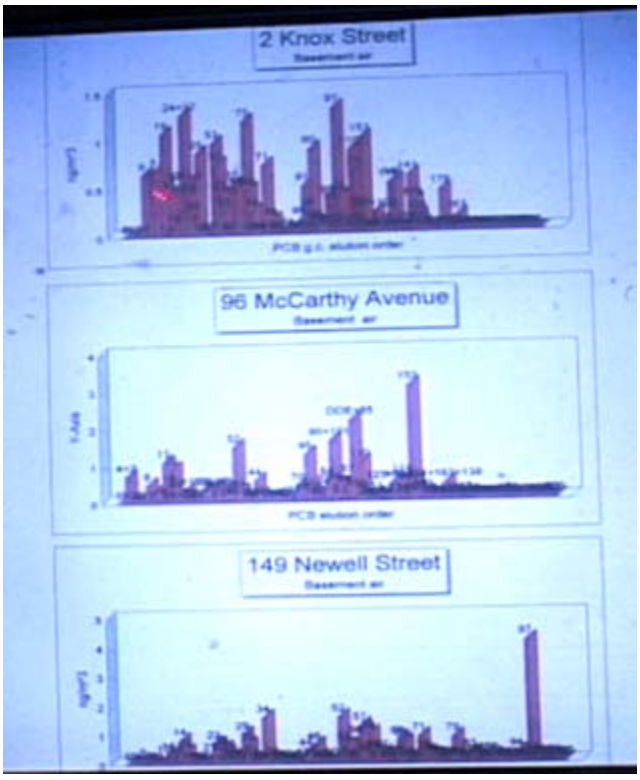
"And what you see is, yes, you now see congeners that you can't even detect in the pure mixtures because they're present in low concentrations. But that doesn't mean what else is a little bit surprising – most people would think this is all you'd get but you get a significant amount of these more highly chlorinated congeners, even though they're less volatile than these lower ones. So … there still is volatization of some of the higher chlorinated congeners.

"Now this shows the same kind of plot for Aroclor 1260 which is even more highly chlorinated, and again this is the parent and this is what you get when you pass air

over it. A lot of the lower chlorinated congeners that you couldn't even see in your pure mixture – but they're some pretty heavy chlorinated congeners that do get into the air.

"Now one of the major reasons we have rather enormous contamination of people that live in the Arctic and the penguins in the Antarctic is just this process. The PCBs volatilize; they move with the air currents to cold climates; they come out of solution; they precipitate with the new-fallen snow …

"Now again, remember this is unpublished data … there isn't enough information here for us to draw firm conclusions, but it will give you a sense of what's in the houses around here.



"This is the basement air. Notice you get a lot of lower chlorinated congeners in this particular basement but you have some of the more highly chlorinated congeners. A different house, not quite as much of the lower chlorinated congeners but some very high peaks of some very persistent congeners. PCB 153 is the congener that's probably in highest concentration in most of us and in breast milk …

"And another basement – in this one striking elevation of the lower chlorinated congeners. In this one, there are lower chlorinated ones but there are also some significant higher chlorinated congeners. Here's the office of Ravin Auto and I think this is more of the pattern we had expected to see with a great predominance of the lower chlorinated congeners, but a few of the higher ones. But if anything it was a surprise that in most of these basements at least we had such a high concentration of some of the higher chlorinated congeners. …

"We did some Pearson Coefficients of the sites we studied and the majority of sites … showed air levels that corresponded roughly to this 3 to 1 ration of Aroclor 1254 to 1260. But there were three places where it didn't

"Of these different PCB congeners, our body tries to break them all down but it does so at very different rates with different efficiencies. And so the more lower chlorinated congeners would be more easily metabolized and removed from the body. The more highly chlorinated congeners, again in general, are more persistent and for some of the more highly chlorinated congeners the half-life in our body is ten years or more, where for some of the more lower chlorinated congeners, they're removed rather rapidly.

"But you still might expect to see a different pattern from someone whose exposure was from inhalation as compared to someone whose exposure was from ingestion. And this compares a man and a woman that lived in a house … their concentration as a function of the concentration of the basement air. And we have this as a basis of congener patterns, and as I said, you can't really make any conclusions from this. You see some congeners – these are the persistent congeners … I said PCB 153 was one of the most persistent congeners. It is present. It does volatilize, but you can see much more in the people than you do in the air and that is something you would expect. … But before anyone draws any conclusions we would want to have much m
I still think that inhalation is a major route of exposure.

"Every time you go into a hospital in New York, that hospital must report all the diseases you're diagnosed with to the State Health Department. We've used that data, which includes the zip code of residence of the patient, and this came from an initiative from the International Joint Commission, which is the U.S./Canadian body which deals with the boundary waters. And they have identified what they call areas of concern which are places along the Great Lakes where there's high levels of contamination. Three of the six areas of concern in New York State are the Buffalo River, the Niagara River, and Eighteen Mile Creek, all in western New York State.

"What we did was to look to see what diseases people that lived within fifteen miles of any of these three rivers were diagnosed with as compared to all the other people that lived in New York State minus New York City, which is a world unto its own, all the people that lived in a zip code that had no state or federal hazardous waste site, and we have 863 of those sites in the state, identified by the federal government, the state government and the International Joint Commission … Probably the most important comparison was every zip code that had a hazardous waste site but not one that contained persistent organic pollutants – so PCBs, dioxins, furans, persistent pesticides.

"In that study we showed that there was about a 20% elevation of diagnosis of thyroid disease in women, and that was true across all of the ages from 20 on up. There was a highly statistically significant elevation of diagnoses of female genital disease, peaking in the late reproductive years, and there was about a 25 – 30% elevation in the incidence of endometriosis. Now those results – they are only a hypothesis-generating but if you think about it, living near a contaminated site – first of all, zip code is a very crude index of exposure, extremely crude, and you know this does not deal with occupation, it does not deal with fish consumption, it does not deal with anything but living near those sites.

"**And we interpret our results to be consistent with the hypothesis that inhalation at relatively ambient levels that people experience around hazardous waste sites is number 1, a risk of increased body burden, and number 2, that that increased body burden is a risk of certain diseases. Now in my judgment cancer is not the most serious thing we're concerned about, that a lot of these other diseases that are not life-threatening but are disruptive are probably more sensitive indicators**, and we are now in the process of expanding these studies to try to do state-wide investigations. (emphasis added)

"I should say we have only one real result that I feel comfortable talking about and that is something that's going to be presented next week in Bangkok at a children's environmental health meeting. We've looked at state-wide now, at diagnoses for hospitalization in terms of children between 1 and 9 for 4 types of infectious disease: upper respiratory tract infections, diarrheal diseases, ear infections, and skin infections, and we find a 30% increase in children under 1 year of age and decreasing so that it is no longer statistically significant at about 9 years of age, and we attribute this to at least our hypothesis that this is a reflection of immuno-suppression as a result of exposure. Now with it being strongest in the youngest child, this would suggest this is probably mother's body burden that is transmitted to the child.

"I think there's a lot that needs to be done and I don't want to overstate those results but I think the hypothesis, I think the concern of this community is totally appropriate; and unfortunately in any smallish community it's very difficult to have adequate numbers to really prove an association between exposure and disease, we probably have to do it at larger population levels. But I think your concern is appropriate.

"What is the cut-off at which you say there is a risk of disease. In the past it's probably, way in the past it was probably 100 ppb and then it came down to about 20, and then it came down to about 10. We have results now from a study of Mohawk adolescents from around the General Motors site in the St. Lawrence River. These are

kids between 10 and 16. We have measured their PCB levels. We have measured their thyroid hormone levels and a variety of other things, but let me only talk about the thyroid levels.

"There was basically a linear statistically significant positive relation between the serum PCB levels and their thyroid stimulating hormone levels. Thyroid stimulating is the brain hormone that drives the thyroid and it goes up when the thyroid isn't doing its job and it needs more thyroid hormone. There was a linear inverse relationship with thyroxin level, both the free and the total in the blood.

"Now none of these levels, either the PCB levels or the thyroid hormone levels were out of the range that most people would say is normal. But the fact that they were so tightly coupled means that those low levels of PCBs, with the mean of 1 are altering biological functions. And that kind of data then is consistent with what we're now finding in the hospitalization records, that at least in women who have much higher frequency of thyroid disease than men do in general, at least in women, living near a PCB contaminated site increases your risk of thyroid disease. It may be something other than PCBs, I understand that, but it's at least consistent with the evidence we have in children."

Here, in brief, are some comments about the other GE-Housatonic River Public Health Assessments.

East Street Area I – In its section on site description and history the report states: "Although no fence exists along the Housatonic River bank south of the site, access to this site via the river is restricted by high vegetation and steep terrain (Blasland, Bouck and Lee, Inc. 1994a)." (Page 5) One has only to walk down Fasce Place to the end of the street to find a well-worn path leading down to the river. While the decline is somewhat steep, the path is littered with debris and obviously well-traveled.

In its section "On-Site Contamination" the report states: "Although air sampling was not conducted directly within this site due to the lack of an identified surface PCB source area compared to adjacent areas, air data are available and evaluated for the Lyman Street, Newell Street Area I, Hill 78 Area, and East Street Area 2 sites, which are close to the East Street Area I site." (Page 7) It is well known in this area of the site that PCB-oil plumes moved from the GE plant into people's basements. Their groundwater is contaminated. Volatilization from these plumes coupled with possible airborne contamination from GE's Thermal Oxidizer warranted past air monitoring and possible current air monitoring. These plumes are still not completely controlled in Newell Street Area I John Pennell, the owner of the former Grossman's Lumber warehouse on East Street, (the former Kelly-Dietrich Warehouse on Figure 4) a building co-owned by GE has often appeared at public meetings in Pittsfield to describe the oil that still flows beneath his building. A comprehensive series of site visits, coupled with appropriate public community meetings, would have identified this continuing pathway of exposure.

Pages 8 –13 summarize test results for this area beginning in 1980. We reiterate our concern about relying solely on GE generated data, especially when the MDPH relies so heavily on this data to determine the nature and extent of its public health assessments.

Another example of how questionable this data can be can be found on Page 9: "Table 3a summarizes the 1980 results of **17 samples from unknown depths** that were collected from vegetable garden soils of 14 residences from the Lakewood residential area (i.e., East, Lombard, Fasce, Newell, Buckingham, and Milan streets). All samples had concentrations less than or equal to 1 ppm PCBs. The most conservative health-based comparison value available for PCBs in soil is 0.4 ppm, which is the CREG." (emphasis added.) It is important to put GE's early sampling regime in perspective.

In October, 1999 the Commonwealth of Massachusetts filed suit against the General Electric Company for failure to adequately notify the agency of its PCB-fill program despite the fact that internal memos warned GE management of that extensive program and warned about potential liability and health impacts. The complaint alleges that GE did not fully disclose the information it possessed. The Commonwealth's claim mirrors a common complaint among former GE workers who routinely disposed of PCB-contaminated waste and other toxic materials that GE knew what it was doing but failed to alert appropriate public agencies. The Commonwealth, without public input, settled its suit out of court for a $1.5 million payment.

Page 8 states: "Residential Area: Although it was mentioned that in 1955 (Blasland, Bouck and Lee 1994a), oil was detected in the basement of 1229/1231 East Street and that GE bought and demolished this and two other structures (i.e., 1217 East Street and 1215 East Street) in the late 1970s to 1980, MDPH is not aware of any environmental data available for these properties. Thus, opportunities for past exposures at these properties cannot be fully assessed. … After the demolition of the houses on these three properties, GE built the Northside Recovery System on that section of land."

On Page 9, the report chronicles 1980 testing of 46 residences of the Lakewood section, with PCB levels as high as 152 ppm. … The report notes: "To supplement the Northside Recovery System in recovering the remaining scattered pockets of oil, GE installed the Southside Recovery System on that section of land in 1987 (Blasland, Bouck and Lee, Inc., 1994a). The report states: "It is also noted that all of the indoor samples were taken from areas of the basement where access was limited and contact would be infrequent (e.g., utility line holes and sumps) (Blasland, Bouck and Lee 1994a). This is, of course, is the interpretation of GE's contractors, Blasland, Bouck and Lee, and not the testimony of the residents of these homes.

now we have Hiser, H&S Automotive up there but Bardo's Bakery I remember they had a sump pump at the bottom of the stairs and I said to Angelo Ignatosca at the time and representatives of the General Electric Company and EPA, if there's no oil in that sump pump, I'll agree with you, it never penetrated the southerly side of East Street and when we went up there, we checked that sump pump, it was loaded with oil … and I explained it to them what happens when you empty that sump pump into the city sewer line, from there it goes down to the sewer treatment plant. From the sewer treatment plant into the Housatonic River. …

"And they also stated, when I say 'they' I'm talking about representatives of the General Electric Company and Angelo Ignatosca that it did not touch the Housatonic River, and yet we found out that it did penetrate the Housatonic River. They said it did not contaminate Goodrich Pond and since then we found out that it also contaminated Goodrich Pond."

The history of public involvement at this site, and the history of agency involvement as well, has been one of constant discovery, and of reevaluation. We've written earlier about how inadequate the 1983 Stewart Report estimate of 40,000 pounds of PCBs in the entire Massachusetts area was. Similarly it took until 1996 for GE to reveal the existence of the massive residential and commercial PCB contamination that began in the 1940s. It is profoundly troublesome for us that MDPH continues to base most of its conclusions on GE data without a call for additional, more objective data to adequately complete these health assessments..

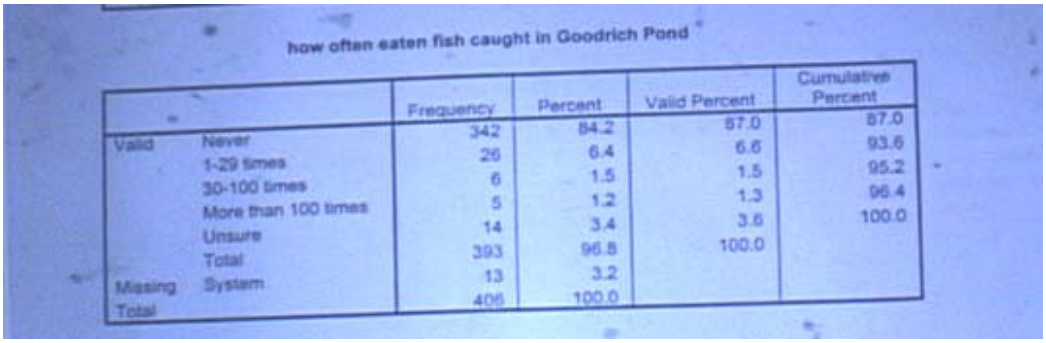
On Page 15, in its section on Completed Exposure Pathways, MDPH reiterates the lack of environmental data that is available for the residential area "Little or no environmental data are available for these properties, and MDPH does not have information on the possible duration of exposure opportunities to the affected residences. The only environmental data available for any if these six residences were from testing in 1980 of various surfaces (e.g., walls, utility lines, soil) in the basements. Opportunities for exposures might have occurred through inhalation of PCBs volatilized from these surfaces in the basements or contact with these surfaces in the basements." Once again, MDPH classifies that this area site as an "Indeterminate Public Health Hazard."

The Lakewood neighborhood is a close-knit neighborhood and it would not be difficult with the aid of neighborhood leaders like Remo DelGallo and others to interview members of the family who lived in those houses to establish a record of possible exposure.

At the recent February 22, 2002 meeting sponsored by HRI and Tufts University, Dr. Richard Clapp, formerly of the John Snow Institute, and currently on the faculty of the Department of Environmental Health at the Boston University School of Public Health spoke about the HRI Community health Survey:

"This is a work in progress … based on some work we had done with an ATSDR-funded citizens group around what was at one point the number one toxic waste site in the U.S., the Lipare Landfill … The idea was to modify that for Pittsfield, for the

"406 completed questionnaires were received, some of these are household responses of two and three … but in any case there were 406 questionnaires suitable for



how often eaten fish caught in Goodrich Pond

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	342	84.2	87.0	87.0
	1-29 times	26	6.4	6.6	93.6
	30-100 times	6	1.5	1.5	95.2
	More than 100 times	5	1.2	1.3	96.4
	Unsure	14	3.4	3.6	100.0
	Total	393	96.8	100.0	
Missing	System	13	3.2		
Total		406	100.0		

[One question] "Fish Caught in Goodrich Pond, which Tim has already mentioned to you as a contaminated site, most had said 'never ate fish' but quite a few had eaten 1 29 times and some more than that ate fish caught from Goodrich Pond.

"What we've done so is basic frequencies, and these are stratified by age, and this is one of the results. This is "Prevalence of Skin Rash in Lakewood" as compared to the National Health Interview Survey.

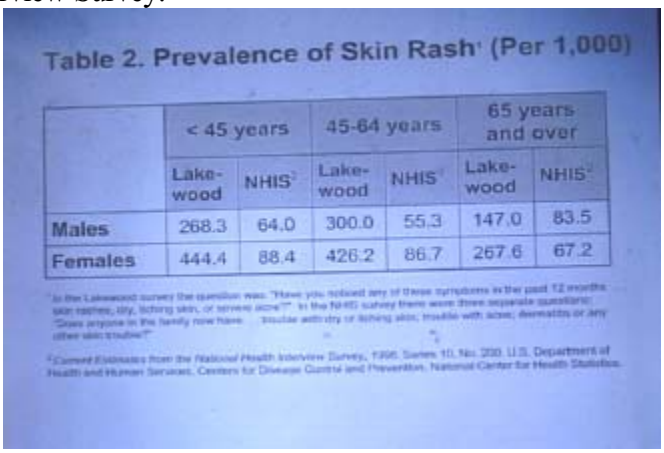


Table 2. Prevalence of Skin Rash[1] (Per 1,000)

	< 45 years		45-64 years		65 years and over	
	Lake-wood	NHIS[2]	Lake-wood	NHIS[2]	Lake-wood	NHIS[2]
Males	268.3	64.0	300.0	55.3	147.0	83.5
Females	444.4	88.4	426.2	86.7	267.6	67.2

[1] In the Lakewood survey the question was: "Have you noticed any of these symptoms in the past 12 months: skin rashes, dry, itching skin, or sensory skins"? In the NHIS survey there were three separate questions: "Does anyone in the family now have … trouble with dry or itching skin; trouble with acne; dermatitis or any other skin trouble?"

[2] Current Estimates from the National Health Interview Survey, 1996. Series 10, No. 200. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics.

"This questionnaire is designed so that some of the questions are the exact same questions as are asked on the National Health Interview Survey so you can compare Pittsfield responses, or Lakewood responses to the national prevalence of these same conditions …

"So you can see males and females under age 45 the prevalence of skin rash per 1,000 is quite high, and quite high especially compared to the national prevalences, and then if you can look at the age group 45 – 64, again the prevalences are quite high in Lakewood as compared to the national prevalences. Skin rash is one of the things that everyone … agrees is caused in humans by exposure to PCB. And then 65 years and older, again, the prevalences are not quite as high.

"There's another table … a response "Self-reported Thyroid Conditions" and that was also quite high in the Lakewood area."

Unkamet Brook:: The Health Assessment for Unkamet Brook reinforces some of our main points about the lack of complete and accurate data and the need to fill these gaps. On Pages 10-11, the report details the results of four fish samplings. " … the levels in the fish exceed both the EPA screening value and the Food and Drug Administration action level." On Page 14, the report states: "The fish sampling data from Unkamet Brook show that, under current conditions, the brook does not contain edible fish populations (i.e., sought-after sportfish of sufficient size). Some popular sportfish species were identified in the brook, but were not retained for analysis because they were not of legal size. However, if conditions in the brook change, it is possible that edible fish populations could thrive there. Consumption of these fish could then present a public health hazard. At this time, MDPH is not aware of any people fishing at the site."

We have been aware for many years of a lag between potential exposure to actionable levels of contamination and public notification of risk. For years, HRI has pressed the environmental agencies to better post land and the river bank. It has taken the MDPH more than a year after high levels of PCBs were found in fish in Goodrich Pond to post the Pond. Some local residents were concerned enough to develop and post their own warning posters.

Homemade Poster Warning About Fish and Wildlife in Goodrich Pond

We urge the MDPH to take some initiative and err on the side of safety to post areas of Unkamet Brook.

On Page 11, the report states: "The ambient air sampling conducted in 1983 did not use the sampling methodology for collection of PCB samples that is currently recommended by EPA and would not meet current EPA's QA/QC criteria for comparability, representativeness, precision, and accuracy. Other QA/QC controls such as co-located sampling locations, trip blanks, analytical method blanks, and sampling equipment calibration were also not included in the 1983 ambient air sampling program (Blasland, Bouck and Lee 1995b).

On Page 19, the report notes: "However, the former landfill area has not been fully characterized and recent evidence (i.e., discovery and removal of drums and capacitors during summer 1998) has shown that there is potential for additional contamination to be discovered. Thus, the opportunities for exposure may not be fully characterized, and it is indeterminate whether exposure may result in health effects."

Hill 78: In its summary section, the report states: "While there is no present contact with subsurface soils, PCB concentrations are very high in some areas (i.e., 47, 385 ppm in landfill area and 18,741 ppm beneath the other unpaved areas). Hence, based on past opportunities for exposure to contaminated soil, particularly for many decades prior to capping of the landfill, the site represented a public health hazard." (Page 1)

Section **B. Site Description and History** states: "From the 1940s to 1991, the 3.5 acre landfill was filled with excess soil from facility-wide excavation nonhazardous solid materials, nonbiodegradable demolition materials (e.g., metals, bricks, glass), and snow removed from the facility roadways and parking lots. … Although former GE employees have stated that they believed that drums of fuller's earth contaminated with PCBs might have been disposed of in the landfill in the 1950s and 1960s, no indication of drummed material has been found through the boring programs as part of Phase I and Phase II investigations (Blasland, Bouck and Lee 1997)."

We have spoken to GE workers who have told us that barrels of PCB-contaminated oil, as well as barrels of PCB-contaminated Fullers Earth and other toxics were disposed of in the Hill 78 landfill. US EPA and Massachusetts DEP's reports reveal contamination at significantly higher levels than MDPH indicates.

The 1988 EPA RCRA Site Assessment delineates the extent of the problem: "Building 78 Landfill - The unit was formerly a ravine which has been filled with waste material. ... **Former employees stated in an interview that drums and liquid containing 'Pyranol' were disposed in the landfill in the 1950s and 1960s**. Pyranol is composed of 60% PCBs. Sampling of the fill has revealed some areas with PCB concentrations at several hundred ppm. ... **DEQE [the Massachusetts Department of Environmental Quality and Engineering - which preceded the DEP] suspects an oil layer exists in the landfill**. Former employees stated PCB-containing liquids were poured on the ground." (emphasis added).

The APRIL 1994 Public Involvement Plan document by the Massachusetts DEP states: "The Hill 78 landfill is approximately two acres in size with a maximum depth of approximately 40 feet. ... The school property is within 50 feet of the Hill 78 site fence line. From approximately 1940 to 1980, GE used the Hill 78 area as a landfill for demolition or construction debris, excess fill and solid (reportedly non-hazardous) waste. GE also allegedly used the landfill to dispose of drums containing PCBs and fuller's earth saturated with PCBs in the 1950s and 1960s. The EPA RCRA Facility Assessment stated that former GE employees disposed of PCB oil in the landfill. From 1980 to early 1990, GE used this area to store soils containing less than 50 ppm PCBs from routine, facility-wide excavations**. Sampling of the fill revealed areas with PCB concentrations up to 120,000 ppm in subsurface soil."** (emphasis added).

When HRI has pressed the agencies to conduct further tests on Hill 78 they have routinely told us that they already believe there is liquid product and barrels of PCB-oil there, but that it is more dangerous to move the waste than to isolate it.

While MDPH reports the landfill "was covered by a synthetic cap in 1991 as part of a short-term measure. The cap consisted of a geotextile layer placed over the top of the landfill, followed by a one-foot thick layer of crushed stone," it neglects to mention that Hill 78 is without any bottom layer protective cap. HRI has raised concerns about this for years, and lobbied hard and successfully to ensure that the newly created adjacent landfill at Building 71 was built with a bottom layer cap.

Given the report's reliance on faulty data, Section **B. Potential Exposure Pathways,** Subsurface Soil ought to be revised to state: "For example, opportunities for exposure up to 120,000 ppm of PCBs might happen if the landfill is breached and one comes in contact with contaminated subsurface soil, but could possibly result in exposure to up to 600,000 ppm if one contacts subsurface pure liquid product."

The report goes on to note in its section on Sediment and Surface Water that "While the Hill 78 Area site does not directly abut the Housatonic River, groundwater from the site does discharge into the river (Blasland, Bouck and Lee 1997). Groundwater from the Hill 78 Area site may contribute to PCBs in the Housatonic River, but probably not to a significant extent."

The Massachusetts DEP's APRIL 1994 Public Involvement Plan states:

"In 1991, **GE's consultants completed a Phase I investigation of the site. ... Results confirmed that the landfill area is the most contaminated portion of the site.** Ground water in the vicinity of the landfill area is contaminated with PCBs at concentrations up to 9 ppb. In addition, VOCs were detected in ground-water samples collected from wells located downgradient of the landfill area and south of the Altresco power plant at concentrations of less than 1,000 ppb. Ground-water samples collected from a well in the southwestern corner of the site contained concentrations of less than 30 ppb of dioxins and furans. (emphasis added.)

The lack of a bottom liner to the Hill 78 landfill plus the presence of significantly high levels of PCBs in the landfill leads us to believe that future risks do exist; and they may in fact exist to a significant extent.

EPA scientists have been concerned about releases from landfills for many years:

"There is good theoretical and empirical evidence that the hazardous constituents that are placed in land disposal facilities very likely will migrate from the facility into the broader environment. This may occur several years, even many decades, after placement of the waste in the facility, but data and scientific prediction indicate that, in most cases, even with the application of best available land disposal technology, it will occur eventually." (Federal Register, Feb. 5, 1981, pg. 11128)

"Manmade permeable materials that might be used for liners or covers (e.g., membrane liners or other materials) are subject to eventual deterioration, and although this might not occur for 10, 20 or more years, it eventually occurs and, when it does, leachate will migrate out of the facility." (pg. 11128)

"A liner is a barrier technology that prevents or greatly restricts migration of liquids into the ground. No liner, however, can keep all liquids into the ground. Eventually liners will either degrade, tear, or crack and will allow liquids to migrate out of the unit." (Federal Register, July 26. 1982, Pg. 32284)

"Some have argued that liners are devices that provide a perpetual seal against any migration from a waste management unit. EPA has concluded that the more reasonable assumption, based on what is known about the pressures placed on liners over time, is that any liner will begin to leak eventually." (Pp. 32284-32285)

"Since disposing of hazardous wastes in or on the land inevitably results in the release of hazardous constituents to the environment at some time, any land disposal facility creates some risk." Federal Register, May 26, 1981, Pg. 28315)

"The longer one wishes to contain waste, the more difficult the task becomes. Synthetic liners and caps will degrade; soil liners and caps may erode and crack ... EPA is not aware of any field data showing successful long-term containment of waste at facilities which have not been maintained over time." (Pg. 28324)

"First, even the best liner and leachate collection will ultimately fail due to natural deterioration, and recent improvements in MSWLF containment technologies suggest that releases may be delayed by many decades at some landfills. For this reason, the Agency is concerned that while corrective action may have already been triggered at many facilities, 30 years may be insufficient to detect releases at other landfills." EPA, Federal Register, August 30, 1988, Vol., 53, No. 168.

In Section **B. Evaluation of Possible Health Effects,** on pages 19-20, the report states: "Assuming that employees spent 59 working years on the site, they could have incidentally ingested soil during their activities at a level exceeding ATSDR's MRL and possibly the lowest LOAEL, which is the level at which health effects have been observed in scientific studies. It is possible that such exposure might have resulted in some health concerns (e.g., immunological) if these individuals had frequent contact with the soil with the highest concentrations of PCBs. Although the assumptions used are conservative (e.g., ingestion over a lifetime), the site could have presented health concerns to some exposed workers. However, assuming that an employee was exposed to average concentrations (e.g., approximately 27 ppm) across the site, the resulting estimated exposure is approximately at ATSDR's MRL and lower than the LOAEL. Thus such an exposure would be unlikely to result in adverse noncancer health effects. Opportunities for exposure to site surface soils at average concentrations would not pose an increase in cancer risk for workers.

"During the time people worked on the site, they were more likely to have had opportunities for exposure to average PCB concentrations rather than the maximum concentrations … "

In our extensive interviews with former GE workers who handled waste materials, we learned that apart from gloves, safety glasses, and boots, they were not provided with safety gear when they were working with these materials. We know that drums and liquid waste was deposited at Hill 78 and we've been told by GE workers, that oftentimes because parts, barrels etc. were wet and slippery, they removed their gloves to handle them.

This is a clear case where extrapolating from incomplete soil data and hypothesizing about work habits can easily result in inaccurate assessments about possible health effects.

While unfortunately former GE employees continue to die, there are still some former workers with experience in handling GE's PCB waste who can provide more accurate records about what they were handling, their work habits, and potential exposure.

Newell Street Area II: We have written previously of our concerns with ambient PCBs and the experience of David Gibbs in this area.

On page 10, section **A. Completed Exposure Pathways**, the report states: "The wooded area and the WMECO area have been highly vegetated for almost 50 years and MDPH is not aware of frequent past use of these areas." Interviews with residents of the area, provide a different picture. Carmela DiNicola, recently deceased at the age of 87, told us that for many years the end of Sackett Street and the WMECO area was a private dumping area that accepted GE waste. She remembers constant truck traffic from GE and told us that her brothers and their friends used to routinely play amongst the barrels filled with waste. She remembers electrical parts exposed in the area. Residents became so used to the waste that they began to use it as a local dump. Sackett Street is still unpaved and a likely spot for neighborhood children to play.

We therefore question some of the conclusions on pages 16-17 of section **B. Evaluation of Possible Health Effects.** The report states: "MDPH is not aware of any reports of frequent recreational use of this property by nearby residents in the past" and concludes "limited opportunities for exposure suggest that under past and present conditions, adverse health effects would not necessarily have occurred."

"They didn't test anywhere where I thought they would have. I mean I have an oxbow in my backyard 50 feet from where I live. There's transformers buried back there, there's oil floating on the ground. I live right off the river. They got contamination barriers there and they come back and do a surface sample and they won't come back and retest."

Former Oxbows A, B, C, J, and K: We reiterate the concern of MDPH about the lack of complete and reliable data for this site: "There were some environmental data gaps identified in this health assessment. The soil and groundwater sampling within the former oxbows vary in terms of thoroughness, Because these areas were filled with debris of unknown and varied origin, the potential exists for other contaminants to be present at levels of concern. Limited environmental data available for subsurface soil in the former oxbows indicate that some elevated concentrations of contaminants are present." (page 1)

In various sections of this assessment, the report notes evidence of recreational and other human activity, ranging from hiking, campfires, fishing, etc. This assessment provides another case where the lessons learned from site visits could have been greatly enhanced with community meetings and selective personal interviews. Considering Blasland, Bouck, and Lee's analysis that "a residential population of 5,400 persons was estimated to live within a half-mile radius of Former Oxbows A, B, and C and 2,550 persons were estimated to live within a half-mile radius of Former Oxbows J and K" these events would have provided yet another layer of valuable information about past and current use of these areas, and probable human health consequences. (Page 6)

This kind of clarification is especially appropriate given the report's finding on page 12: "Past, present, and future opportunities for exposures might have occurred or be occurring to children who use the walking path located through this former oxbow as a shortcut to school. There is also evidence of campfires at Former Oxbow C, and residents report that teenagers congregate and walk their dogs in the area. Therefore, opportunities for exposure to compounds in the soil also are occurring at the time of this health assessment for those who use the former oxbow for recreational purposes."

And that's true as well for Former Oxbow B: "Use of footpaths of Former Oxbow B is expected to result in some opportunities for exposure to contaminants in the soil. It is difficult to quantify exposures from recreational activities, but some evidence of recreational activity (e.g., fishing gear) was found at these two areas. It is likely that walking or jogging through these former oxbows has occurred in the past and occurs currently." (Page 19) Interviews with local sportsmen and women in the immediate neighborhood might provide MDPH with the kind of information that would make it easier to quantify just such activity. Mark Jester, a leader of Berkshire County sportsmen and women, lives and works in the Lakewood community.

We believe that this kind of additional information is essential, especially when MDPH relies on speculation while making its assessments. On page 19, the report concludes: "Employees and recreational users who had or have regular contact (e.g., 5 days a week for 52 years for employees) with higher levels of PCBs on these former oxbows may have been exposed to levels exceeding ATSDR's MRL, but not the LOAEL, which is the level at which health effects have been observed in scientific studies. It is unlikely, however, that any individual would engage in recreational activities (i.e., camping or fishing) in these specific areas on a weekly basis throughout the year. Thus , under past or current use conditions, it is not expected that adverse health effects would result from these limited opportunities for exposure."

East Street Area II: The report notes the high levels of PCBs and dioxin in the contaminated soil (especially in the area of former Building 68). On page 8, it is stated: "Before remedial actions took place, samples were collected from depths of 0- to 0.5- feet and 0- to 2- feet along the riverbank next to Building 68 and up to approximately 390 feet downstream from the building. Eighteen 0- to 0.5- ft samples were collected from the riverbank. Four of the 0- to 0.5- ft soil samples had PCB concentrations of 730 parts per million (ppm), 1,700 ppm, 2,200 ppm and 5,500 ppm. Overall, concentrations ranged from 8.6 to 5,500 ppm, with a mean of 681.3 ppm …"

In its section **A. Completed Exposure Pathways,** the report states: "Potentially affected populations include past and present employees (i.e., plant workers, maintenance personnel, grounds keepers, etc.) or contractors working at the site. Past or present exposures might have occurred through incidental ingestion of contaminated soils at the site. It is important to note, however, that opportunities for exposure to PCBs in soils through direct contact at the East Street Area 2 site may be mitigated somewhat by vegetative cover in the unpaved areas located in the southeastern corner of the site." (Page 15)

MDPH states in the Discussion section on pages 16 and 17 that: "Opportunities for exposure to these compounds are primarily via incidental ingestion of surface soil at the site, skin absorption of PCBs through direct contact with PCB contaminated soils, or inhalation of PCBs detected in ambient air."

In Section **B. Evaluation of Possible Health Effects**, the report states on page 21: "If we assume that employees were exposed to average concentrations across the site, the resulting estimated exposure is unlikely to result in adverse health effects. However, if there were site workers who might have had some regular contact with surface soils (about 680 ppm) in the Building 68 area, particularly in the 30-year period following the PCB spill near Building 68 in 1969, and if they incidentally ingested soil during their activities, and also absorbed some PCBs through the skin from direct contact with soil, it

is possible such opportunities for exposure might present some health concerns (e.g., immunological effects) to some individuals. If such activities occurred, these exposure opportunities could have exceeded ATSDR's MRL but would likely be less than the lowest reported LOAEL. Thus, it is possible that the site may have presented health concerns for some individuals. However, no information was available to MDPH that would indicate whether or not this type of activity occurred."

The report ignores an additional and perhaps far more dangerous completed exposure pathway in this area. Several former GE employees have told us that there was frequent dumping of PCB-contaminated oil in the East Street II area, sometimes the emptying of waste oil directly into the ground, oftentimes the burial of oil-filled and Fullers earth-filled barrels. The GE employees engaged in this conduct were provided work gloves and work boots.

Some final thoughts. Each of these assessments calculates exposure opportunities and evaluates possible health effects as if these opportunities exist separately and uniquely. What if frequent recreational activities at Oxbow C for example were combined with other possible exposure scenarios: past occupational exposure at GE Power Transformer, inhalation from present volatilization and past inhalation from the GE Thermal Oxidizer, contact from soil at a residential fill property, and ingestion of fish. Where in these reports is there an acknowledgment of multiple completed exposure pathways and a sense of possible accumulated exposure risk?

We would like to conclude with a call for additional studies to fill important data gaps at these sites, in order to better calculate whether, and in what ways, people are being exposed to the hazardous substances present in Pittsfield.

We believe it is important to conduct several PCB serum studies amongst those most likely to have been exposed: 1) those who live and work closest to the GE facility; and 2) those people, including children and young people, who have lived at properties which received GE PCB fill and whose land tested above 2 ppm in soil. We believe it would be useful to correlate serum PCB levels with PCB soil levels. In both cases we believe it's important to conduct congener-specific testing, and critical to establish a more local background level.

While these assessments deal with environmental exposures, we would be remiss if we did not renew our call for a well-crafted PCB serum study of the surviving GE workers. The only study performed was the Wegman Study, a GE-financed study with many critical data gaps. Although Dr. Wegman had agreed to make his raw data public, GE purchased the data and has refused to publish it. For many years, GE has claimed that the much of the data and employee records no longer exist, but the Housatonic River Area Advisory Committee on Health Studies has recently learned that those records were computerized and still exist. We urge the MDPH to conduct a new study of occupational exposure in Pittsfield and Berkshire County, Massachusetts.

The April, 2002 Health Consultation: Assessment of Cancer Incidence, Housatonic River Area, Berkshire County, Massachusetts, 1982 – 1994 notes that during 1982 – 1986 "the incidence of bladder cancer among males occurred statistically significantly more often than expected. Among males, 61 cases of bladder cancer were observed when approximately 39 cases would have been expected (SIR=158; 95% CI= 121–203). Slight elevations also were observed among males diagnosed with NHL and among females diagnosed with cancers of the breast and thyroid. These elevations were based on three or less cases, and none was statistically significant.

"Overall, cancer incidence in Pittsfield during the latter time period (1987 1994) occurred more often than expected for cancers of the bladder, liver, and thyroid. Although elevations were observed among these cancer types, none of the elevations was

statistically significant. Bladder cancer incidence was also elevated among males during 1987 – 1994; however, the increase was not statistically significant. Non-significant elevations also were observed among males diagnosed with cancer of the liver, as well as Hodgkin's disease and NHL. Among females, eighteen cases of thyroid cancer were observed when approximately 13 were expected … " (pg. 11)

Some of these statistics have greater significance when read in context. As the male work force retired, Many of those male workers who had contact with PCBs in the late 1930s and early 1940s through to the 1970s, began to retire in the 1980s. Based on our interviews with Ed Bates and Charles Fessenden it is not surprising that the incidence in bladder cancer might have peaked in the 1982 – 1986 period and began to drop during 1987 – 1994.

Similarly, it is important to recall Dr. Carpenter's statement about the inherent limits of arriving at statistically significant data with such a small population sample. Given that caveat, for example, it might be important for other women in the community to follow up on the fact that "Among females, eighteen cases of thyroid cancer were observed when approximately 13 were expected."

The data for Census tract 9002 suggests a link between the General Electric site and male bladder cancer. The GE site is located adjacent to this section of the Pittsfield. Many of the GE workers lived in this part of town; the thermal oxidizer was located here, and many of the contaminated residential fill properties are here. "During the 13-year time period 1982 – 1994, cancer incidence in CT 9002 generally occurred below the expected rates, with the exception of bladder and breast cancers. Cancer of the bladder occurred more often than expected among males and for the city as a whole. The increase observed in bladder cancer incidence was primarily due to a nearly statistically significant elevation in incidence among males (15 observed cases versus approximately 8 cases expected; 95% CI=100-295). Overall and among females, breast cancer occurred significantly more often than expected (refer to Table 3). Among females, 47 cases of

1986 in CT 9010 … Female breast cancer incidence also was elevated in this census tract. During 1982 –1986, 29 cases of breast cancer occurred, when approximately 20 cases were expected (SIR=148) … Also during this time period, a slight elevation was observed overall in bladder cancer incidence (11 cases observed versus 9.5 cases expected; SIR=115)." (pp. 17 18)

The MDPH concludes: "Although two of the census tracts in Pittsfield adjacent to the GE site (CT 9002 and 9011) experienced statistically significant elevation in cancers of the bladder, breast and NHL, a pattern suggesting statistically significant elevations in cancers of the bladder, breast and NHL, a pattern suggesting that a common environmental exposure pathway played a primary role in these CTs was not observed nor were cases distributed more toward the vicinity of the GE sites."

Was a complete residential history taken from these patients? Was residential information correlated with recently emerging information about GE's PCB-contaminated fill program? Had the patient consumed PCB-contaminated fish? Were ambient air levels tested in the patient's home? We know that most of these questions were never asked of patients during the 1982-1994 period.

We believe it is premature to make such a judgment without additional information. We believe that far more comprehensive work must be done before one can discount a significant environmental exposure pathway.

We believe, therefore, that it would be wise to expand upon the continuing work of HRI to develop a rigorous health study for the neighborhoods that border the GE facility.

In discussing whether occupational factors might have contributed to the development of some cancers, MDPH notes that occupational information reported to the Massachusetts Cancer Registry "does not include specific information on job duties." (pg. 21) Furthermore, "occupational data was incomplete or missing for 69 of the 155 (45%) individuals diagnosed with bladder cancer." (pg. 25) Of the remaining individuals, 25% listed an occupation at GE. Considering the fact that GE was the primary employer in Berkshire County, and Pittsfield in particular, it's safe to assume that many of the 69 worked there as well.

We know, according to Dr. Clapp, who worked during the earliest days of Massachusetts Cancer Registry, it became apparent to MCR that Pittsfield was experiencing greater than expected incidences of bladder cancer in the 1980s. Unfortunately while some preliminary investigation took place, the agency was unable to fund a more comprehensive study at that time. For many years, HRI has urged MDPH to obtain the extensive employment records at GE to fill many of the existing data gaps.

The MDPH attempts to explain the greater incidence of male bladder cancer by noting that 67% of all males diagnosed with bladder cancer were current or former smokers, yet of the 8 females in CT 9011 diagnosed with bladder cancer in the 1987-1994 period, 6 of them reported as nonsmokers. (pg. 38)

Additionally, we would like to call attention to the following: increased cancer of the thyroid in Great Barrington (6 cases when 3 were expected); and elevation of thyroid and bladder and breast cancer in females in Lee. (pp. 19 –20)

Given the significant data gaps, we find some of the conclusions of MDPH contradictory and unsupportable:

"Although two of the census tracks in Pittsfield adjacent to the GE site (CT 9002 and 9011) experienced statistically significant elevations in cancers of the bladder, breast and NHL, a pattern suggesting that a common environmental exposure pathway played a primary role in these CTs was not observed nor were cases distributed more toward the vicinity of the GE sites." Silver Lake, Goodrich Pond, the Thermal Oxidizer, the Housatonic River, the toxic underground plumes, the PCB dumps off of Newell Street, Hill 78 – all these sites border those neighborhoods. That the MDPH does not consider this reality a contributing factor to the fact that CT 9002 and 9011 experience higher cases of bladder, breast and NHL, belies not only the statistical reality but the daily reality experienced by the people who have lived in these neighborhoods for several generations.

Throughout these comments, we have noted a lack of rigorous site-based investigation. Without further comprehensive study, we are unable to endorse the conclusions of this Health Consultation or the Public Health Assessments for this site.

Sincerely,

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